

CLAIM SUMMARY DOCUMENT

Claims 1-6 (Previously canceled)

Claims 7-22 (Currently canceled)

Claims 23-27 (Previously canceled)

Claims 28-37 (Currently canceled)

Claims 38-42 (Previously canceled)

Claims 43-50 (Currently canceled)

71 Claim 51 (Currently amended) A process for producing unsaturated fatty acids, wherein said unsaturated fatty acid is at least one selected from the group consisting of arachidonic acid, dihomo- γ -linolenic acid, 5,8,11-eicosatrienoic acid ~~and/or~~ and eicosapentaenoic acid, or a lipid containing ~~them~~ said unsaturated fatty acid, which process comprises

57

culturing a microorganism belonging to the genus *Mortierella*, wherein the microorganism is selected from the group consisting of *Mortierella alpina*, *Mortierella elongata*, *Mortierella exigua* ~~or~~ and *Mortierella hygrophila*,

in a culture medium containing phosphate ions in the range of 5 to 60 mM, ~~Potassium~~ potassium ions in the range of 5 to 60 mM, sodium ions in the range of 2 to 50 mM, magnesium ions in the range of 0.5 to 9 mM, and calcium ions in the range of 0.5 to 12 mM, respectively,

to produce said unsaturated fatty acids acid or a lipid containing ~~them~~ said unsaturated fatty acid.

Claim 52 (Currently amended) The ~~method~~ process according to claim 51, wherein the unsaturated fatty acid is arachidonic acid.

58,60

Claim 53 (Currently amended) The ~~method~~ process according to claim 51, wherein the *Mortierella* microorganism is selected from the group consisting of *Mortierella exigua* and or *Mortierella hygrophila*.

Claim 54 (Currently amended) A process for producing unsaturated fatty acids, wherein said unsaturated fatty acid is at least one selected from the group consisting of arachidonic acid, dihomo- γ -linolenic acid, 5,8,11-eicosatrienoic acid ~~and/or~~ and eicosapentaenoic acid, or a lipid containing ~~them~~ said unsaturated fatty acid, which process comprises

2000
65

71 culturing a microorganism belonging to the genus *Mortierella*, wherein the microorganism is selected from the group consisting of *Mortierella alpina*, *Mortierella elongata*, *Mortierella exigua* [or] and *Mortierella hygrophila*,

in a culture medium containing phosphate ions in the range of 10 to 45 mM, potassium ions in the range of 10 to 45 mM, sodium ions in the range of 5 to 40 mM, magnesium ions in the range of 1 to 6 mM, and calcium ions in the range of 1 to 9 mM, respectively,

to produce said unsaturated fatty acids or a lipid containing them said unsaturated fatty acid.

Claim 55 (Currently amended) The ~~method~~ process according to claim 54, wherein the unsaturated fatty acid is arachidonic acid.

Claim 56 (Currently amended) The ~~method~~ process according to claim 54, wherein the *Mortierella* microorganism is selected from the group consisting of *Mortierella exigua* or *Mortierella hygrophila*.

Claim 57 (New) A process for producing unsaturated fatty acids or a lipid containing said unsaturated fatty acids, which process comprises

culturing a microorganism belonging to the genus *Mortierella*

in a medium containing phosphate ions in the range of 5 to 60 mM, potassium ions in the range of 5 to 60 mM, sodium ions in the range of 2 to 50 mM, magnesium ions in the range of 0.5 to 9 mM, and calcium ions in the range of 0.5 to 12 mM, respectively, in the culture medium

71 to produce said unsaturated fatty acids or said lipid containing unsaturated fatty acids,

wherein said unsaturated fatty acid is at least one unsaturated fatty acid selected from the group consisting of arachidonic acid, dihomo- γ -linolenic acid, 5,8,11-eicosatrienoic acid and eicosapentaenoic acid, and

wherein said *Mortierella* microorganism is selected from the group consisting of *Mortierella alpina*, *Mortierella elongata*, *Mortierella exigua* and *Mortierella hygrophila*.

Claim 58 (New) The process according to claim 57, wherein the unsaturated fatty acid is arachidonic acid.

Claim 59 (New) The process according to claim 57, wherein the *Mortierella* microorganism is selected from the group consisting of *Mortierella exigua* and *Mortierella hygrophila*.

same as 51

same as 52, 58, 60

Claim 60 (Re-presented - formerly claim 46) A process for producing arachidonic acid or a lipid containing said arachidonic acid, which process comprises

culturing a microorganism belonging to the genus *Mortierella*

in a medium containing phosphate ions in the range of 5 to 60 mM, potassium ions in the range of 5 to 60 mM, sodium ions in the range of 2 to 50 mM, magnesium ions in the range of 0.5 to 9 mM, and calcium ions in the range of 0.5 to 12 mM, respectively, in the culture medium

to produce said arachidonic acid or said lipid containing arachidonic acid,

wherein said *Mortierella* microorganism is a species selected from the group consisting of *Mortierella alpina*, *Mortierella elongata*, *Mortierella exigua* and *Mortierella hygrophila*.

same
as
52
58

71 Claim 61 (New) The process according to claim 60, wherein the *Mortierella* microorganism is selected from the group consisting of *Mortierella exigua* and *Mortierella hygrophila*.

Claim 62 (Re-presented - formerly claim 49) A process for producing an unsaturated fatty acid or a lipid containing said unsaturated fatty acid, which process comprises

culturing a microorganism belonging to the genus *Mortierella*

in a medium containing phosphate ions in the range of 10 to 45 mM, potassium ions in the range of 10 to 45 mM, sodium ions in the range of 5 to 40 mM, magnesium ions in the range of 1 to 6 mM, and calcium ions in the range of 1 to 9 mM, respectively, in the culture medium

to produce said unsaturated fatty acid or said lipid containing unsaturated fatty acid,
wherein said unsaturated fatty acid is at least one unsaturated fatty acid selected
from the group consisting of arachidonic acid, dihomo- γ -linolenic acid, 5,8,11-
eicosatrienoic acid and eicosapentaenoic acid, and

wherein said *Mortierella* microorganism is a species selected from the group
consisting of *Mortierella alpina*, *Mortierella elongata*, *Mortierella exigua* and *Mortierella*
hydrophila.

Claim 63 (New) The process according to claim 62, wherein the unsaturated fatty
acid is arachidonic acid.

71 Claim 64 (New) The process according to claim 62, wherein the *Mortierella*
microorganism is selected from the group consisting of *Mortierella exigua* and *Mortierella*
hygrophila.

Claim 65 (Re-presented - formerly claim 50) A process for producing arachidonic
acid or a lipid containing said arachidonic acid, which process comprises

culturing a microorganism belonging to the genus *Mortierella*
in a medium containing phosphate ions in the range of 10 to 45 mM, potassium ions
in the range of 10 to 45 mM, sodium ions in the range of 5 to 40 mM, magnesium ions in
the range of 1 to 6 mM, and calcium ions in the range of 1 to 9 mM, respectively, in the
culture medium

to produce arachidonic acid or lipid containing arachidonic acid,

same as 55

71 wherein said *Mortierella* microorganism is a species selected from the group consisting of *Mortierella alpina*, *Mortierella elongata*, *Mortierella exigua* and *Mortierella hygrophila*.

Claim 66 (New) The process according to claim 65, wherein the *Mortierella* microorganism is selected from the group consisting of *Mortierella exigua* and *Mortierella hygrophila*.
